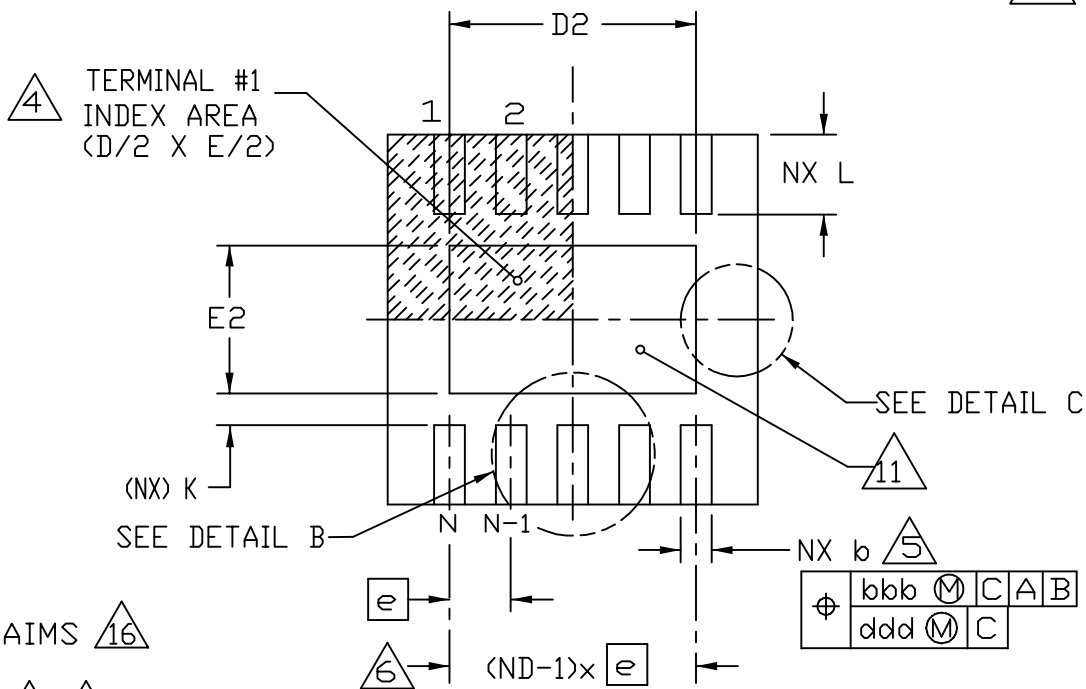
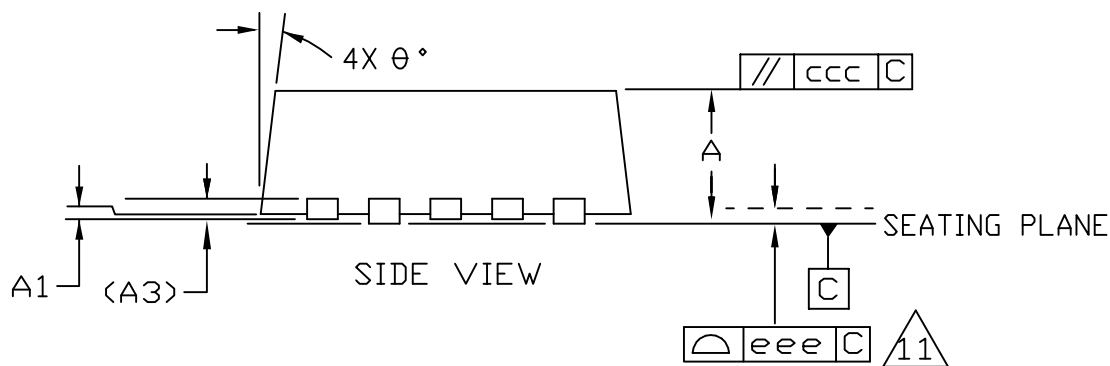


TOP VIEW



BOTTOM VIEW

PATENT CLAIMS 16

FIGURE 1 8 9

JEDEC SOLID STATE
PRODUCT OUTLINE
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THIS **REGISTERED OUTLINE** HAS BEEN PREPARED BY THE JEDEC JC-11 COMMITTEE
AND REFLECTS A PRODUCT WITH ANTICIPATED USAGE IN THE ELECTRONICS INDUSTRY;
CHANGES ARE LIKELY TO OCCUR.

TITLE THERMALLY ENHANCED PLASTIC
VERY THIN, VERY VERY THIN AND
ULTRA THIN FINE PITCH SMALL OUTLINE
NO LEAD PACKAGE

PACKAGE DESIGNATOR
H (V,W,U) F-PSON

NUMBER
MO-229

ISSUE
F

DATE
AUG 2012

SHEET
1 OF 14

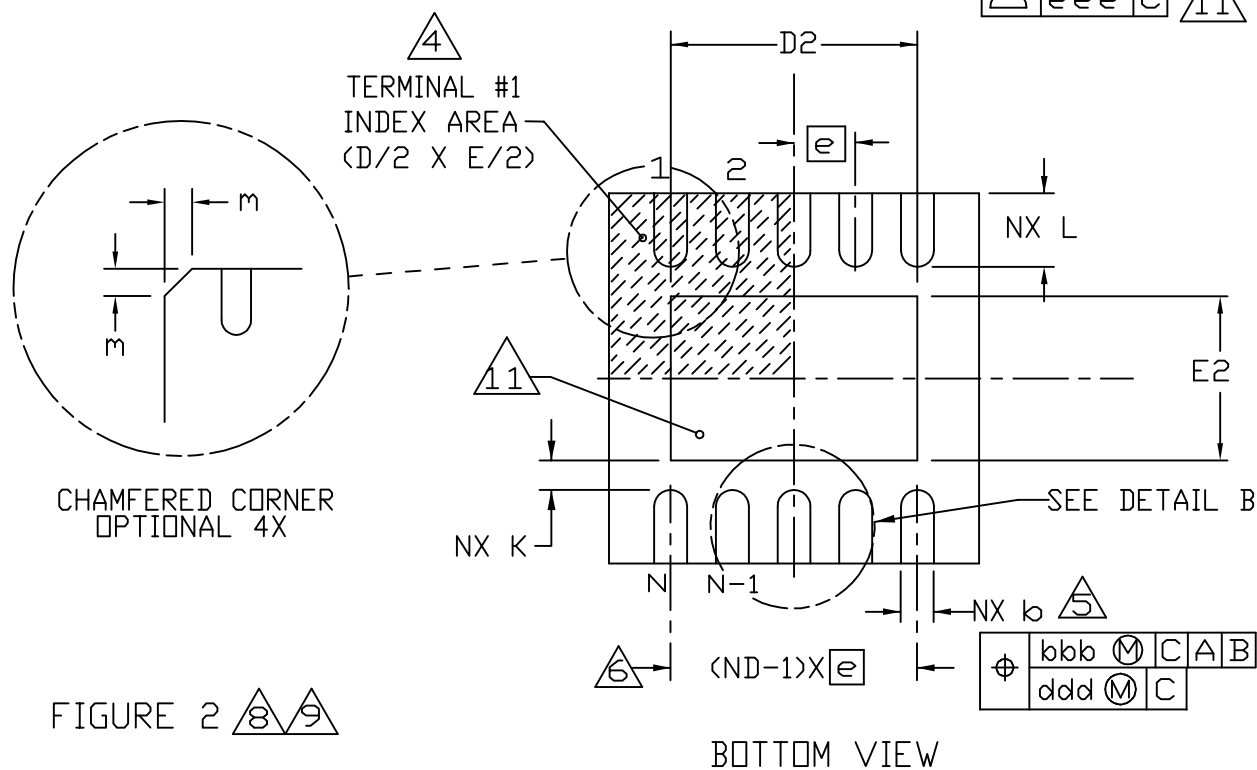
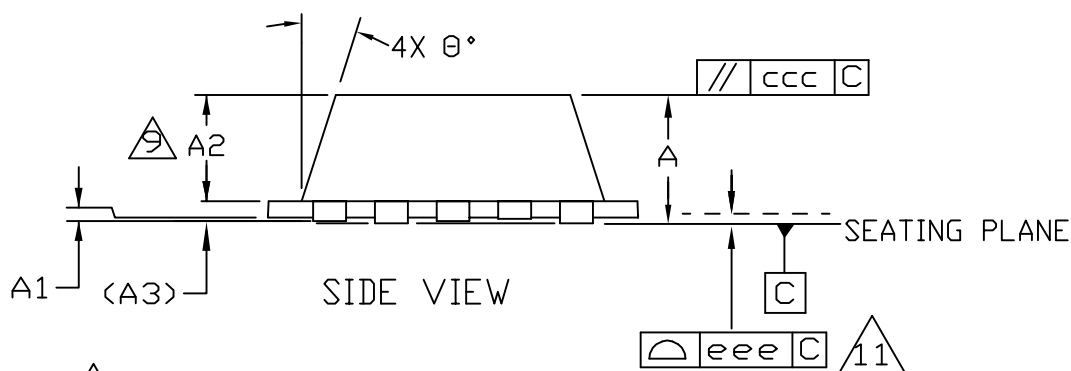
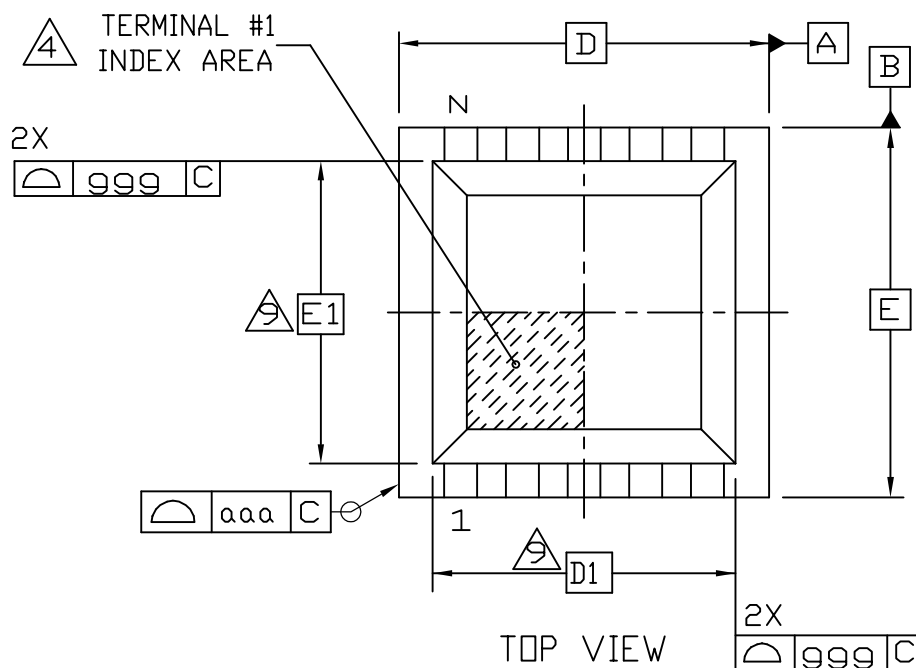


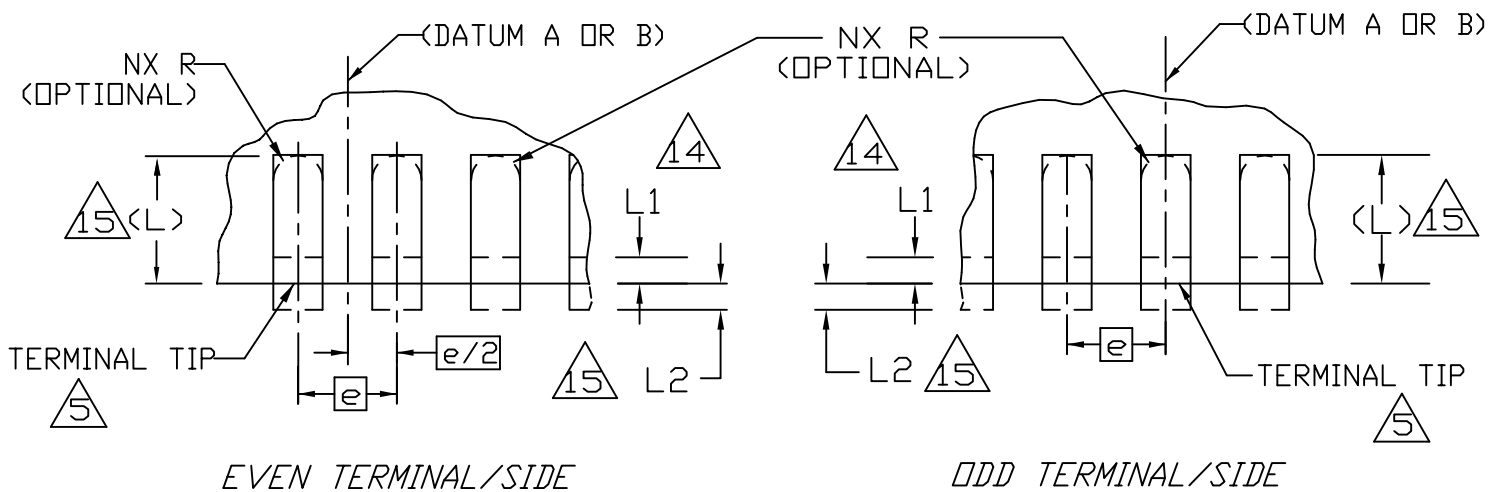
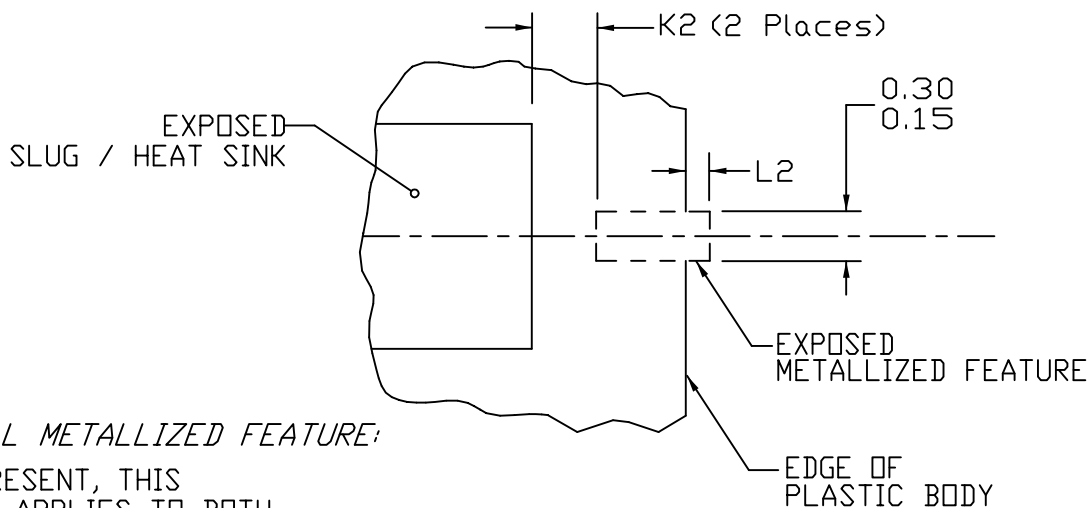


FIGURE 2  



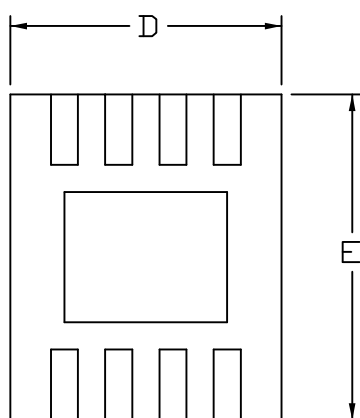
DETAIL B



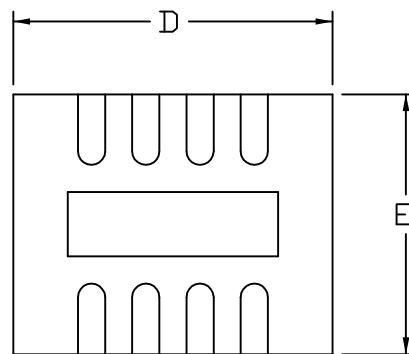
OPTIONAL METALLIZED FEATURE:

WHEN PRESENT, THIS FEATURE APPLIES TO BOTH ENDS OF THE PKG.

DETAIL C



TYPE 1



TYPE 2

RECTANGULAR PACKAGES $\triangle 13$

TABLE 1

VARIATION DESIGNATORS							
FIRST DIGIT CODE		SECOND DIGIT CODE		THIRD DIGIT CODE		FOURTH DIGIT CODE	
OVERALL HEIGHT		BODY LENGTH		BODY WIDTH		TERMINAL PITCH	
A	LETTER CODE	D	CODE	E	CODE	e	LETTER CODE
1.00 MAX	V	1.00	10	1.00	10	0.95	A
0.80 MAX	W	1.50	15	1.50	15	0.80	B
0.65 MAX	U	2.00	20	2.00	20	0.65	C
—	—	2.50	25	2.50	25	0.50	D
—	—	3.00	30	3.00	30	0.40	E
—	—	3.50	35	3.50	35		
—	—	4.00	40	4.00	40	—	—
—	—	4.50	45	4.50	45	—	—
—	—	5.00	50	5.00	50	—	—
—	—	5.50	55	5.50	55	—	—
—	—	6.00	60	6.00	60	—	—

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EXAMPLE: A 10 TERMINAL H(V,W)F-PSON WHICH IS 4mm LONG (DIMENSION D) BY 5mm WIDE (DIMENSION E), A PITCH OF 0.80mm AND A HEIGHT OF 0.8MM MAX WOULD BE LABELLED W4050B.

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TABLE 2

TOLERANCE OF FORM & POSITION					
PITCH SYMBOL	0.95	0.80	0.65	0.50	0.40
aaa	0.15	0.15	0.15	0.15	0.10
bbb	0.10	0.10	0.10	0.10	0.07
ccc	0.10	0.10	0.10	0.10	0.10
ddd	0.05	0.05	0.05	0.05	0.05
eee	0.08	0.08	0.08	0.08	0.08
ggg	0.10	0.10	0.10	0.10	0.10
NOTES	1,2				
REF	11-660				
ISSUE	C				

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TABLE 3

COMMON DIMENSIONS										
	V: VERY THIN			W: VERY VERY THIN			U: ULTRA THIN			
SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX	NOTES
A	>0.80	0.90	1.00	0.70	0.75	0.80	>0.50	0.55	0.65	
A1	0.00	0.02	0.05	0.00	0.02	0.05	0.00	0.02	0.05	
A2	0.55	0.65	0.80	0.45	0.55	0.65	—	—	—	
A3	0.20 REF			0.20 REF			0.15 REF			
L1	—	—	0.15	—	—	0.15	—	—	0.15	14
L2	—	—	0.13	—	—	0.13	—	—	0.13	15
θ	0°	—	14°	0°	—	14°	0°	—	14°	
K	0.20	—	—	0.20	—	—	0.20	—	—	
K2	0.17	—	—	0.17	—	—	0.17	—	—	
R	b MIN/2	—	—	b MIN/2	—	—	b MIN/2	—	—	
M	—	—	0.60	—	—	0.60	—	—	0.60	
NOTES	1,2						1,2			
REF	11-660						11-861			
ISSUE	C						F			

TABLE 4

LEAD WIDTH			
b			
PITCH	MIN	NOM	MAX
0.95	0.30	0.40	0.45
0.80	0.25	0.30	0.35
0.65	0.25	0.30	0.35
0.50	0.18	0.25	0.30
0.40	0.15	0.20	0.25
NOTES	1,2,5		
REF	11-619		
ISSUE	B		

TABLE 5

SUMMARY TABLE SQUARE PACKAGES				
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE
1.5 X 1.5	0.50	4	V1515D	W1515D
2.0 X 2.0	0.65	6	V2020C	-
	0.50	4	V2020D-1	W2020D-1
	0.50	6	V2020D-2,4	W2020D-2,4
	0.50	8	V2020D-3	-
2.5 X 2.5	0.80	6	V2525B	W2525B
	0.50	6	V2525D-1	W2525D-1
	0.50	8	V2525D-2	W2525D-2
3.0 X 3.0	0.95	6	V3030A-1,2	W3030A-1,2
	0.80	6	V3030B	W3030B
	0.65	8	V3030C-1,2	W3030C-1,2
	0.50	8	V3030D-1,4,6,7	W3030D-1,4,6,7
	0.50	10	V3030D-2,3,5	W3030D-2,3,5
3.5 X 3.5	0.50	10	V3535D-1	W3535D-1
	0.50	12	V3535D-2	W3535D-2
4.0 X 4.0	0.80	8	V4040B	W4040B
	0.65	10	V4040C	W4040C
	0.50	10	V4040D-1	W4040D-1
	0.50	12	V4040D-2	W4040D-2
	0.50	14	V4040D-3	W4040D-3
5.0 X 5.0	0.80	8	V5050B	W5050B
	0.50	16	V5050D-1	W5050D-1
	0.50	18	V5050D-2	W5050D-2

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TABLE 6

SUMMARY TABLE RECTANGULAR PACKAGES, TYPE 1					
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE	ULTRA THIN PROFILE
2.0 X 2.5	0.80	4	V2025B	W2025B	-
	0.50	6	V2025D-1	W2025D-1	-
	0.50	8	V2025D-2	W2025D-2	-
2.0 X 3.0	0.50	6	V2030D-1	W2030D-1	-
	0.50	8	V2030D-2,3	W2030D-2,3	U2030D
2.5 X 3.0	0.80	6	V2530B	W2530B	-
	0.50	8	V2530D	W2530D	-
3.0 X 4.0	0.80	6	V3040B	W3040B	-
	0.50	10	V3040D	W3040D	-
4.0 X 5.0	0.80	10	V4050B	W4050B	-
	0.50	14	V4050D	W4050D	-

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13a

TABLE 7

SUMMARY TABLE RECTANGULAR PACKAGES, TYPE 2				
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE
1.5 X 1.0	0.50	4	V1510D	W1510D
2.0 X 1.0	0.50	4	V2010D-1	W2010D-1
	0.50	6	V2010D-2	W2010D-2
2.0 X 1.5	0.50	4	V2015D-1	W2015D-1
	0.50	6	V2015D-2	W2015D-2
2.5 X 1.5	0.50	6	V2515D-1	W2515D-1
	0.50	8	V2515D-2	W2515D-2
2.5 X 2.0	0.50	4	V2520D-1	W2520D-1
	0.50	6	V2520D-2	W2520D-2
	0.50	8	V2520D-3	W2520D-3
3.0 X 1.5	0.50	8	V3015D-1	W3015D-1
	0.50	10	V3015D-2	W3015D-2
3.0 X 2.0	0.95	6	V3020A	-
	0.65	8	V3020C	-
	0.50	8	V3020D-1,4	W3020D-1,4
	0.50	10	V3020D-2,3	W3020D-2,3
3.0 X 2.5	0.50	8	V3025D-1	W3025D-1
	0.50	10	V3025D-2	W3025D-2
3.5 X 2.5	0.50	10	V3525D-1	W3525D-1
	0.50	12	V3525D-2	W3525D-2
3.5 X 3.0	0.50	10	V3530D-1	W3530D-1
	0.50	12	V3530D-2	W3530D-2
4.0 X 3.0	0.50	10	V4030D-1	W4030D-1
	0.50	12	V4030D-2,4	W4030D-2,4
	0.50	14	V4030D-3	W4030D-3
5.0 X 3.0	0.50	16	V5030D-1	W5030D-1
	0.50	18	V5030D-2	W5030D-2
5.0 X 4.0	0.50	14	V5040D-1	W5040D-1
	0.50	16	V5040D-2	W5040D-2
	0.50	18	V5040D-3	W5040D-3
6.0 X 5.0	0.50	16	V6050D-1	W6050D-1
	0.50	18	V6050D-2	W6050D-2



TABLE 8 $e=0.95\text{mm}$ PITCH										
SYMBOL \ VARIATION	V3020A	V3030A-1	V3030A-2							NOTE
	N/A	N/A	W3030A-2							
	—	—	—							
D BSC	3.00	2.50	2.50							
E BSC	2.00	2.50	3.00							
D1 BSC	—	2.25	2.25							
E1 BSC	—	2.25	2.75							
D2	MIN	0.00	0.00	0.00						
	NOM	—	1.50	1.50						
	MAX	2.25	1.60	1.60						
E2	MIN	0.00	0.00	1.10						
	NOM	—	0.70	1.20						
	MAX	0.65	0.80	1.30						
L	MIN	0.20	0.40	0.40						
	NOM	0.30	0.55	0.55						
	MAX	0.45	0.65	0.65						
N	6	6	6							3
ND	3	3	3							6
NOTES	1,2	1,2	1,2							
REF	11-585	11-585	11-660							
ISSUE	A	A	C							
OLD VARIATION DESIGNATORS	VECA N/A	VEEA-1 N/A	VEEA-2 WEEA-2							

TABLE 9 $e=0.80\text{mm}$ PITCH										
SYMBOL \ VARIATION	V2025B	V2525B	V2530B	V3030B	N/A	V3040B	V4040B	V4050B	V5050B	NOTE
	W2025B	V2525B	W2530B	N/A	W3030B	W3040B	W4040B	W4050B	W5050B	
	—	—	—	—	—	—	—	—	—	
D BSC	2.00	2.50	2.50	3.00	3.00	3.00	4.00	4.00	5.00	
E BSC	2.50	2.50	3.00	3.00	3.00	4.00	4.00	5.00	5.00	
D1 BSC	1.75	2.25	2.25	2.75	2.75	2.75	3.75	3.75	4.75	
E1 BSC	2.25	2.25	2.75	2.75	2.75	3.75	3.75	4.75	4.75	
D2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	1.00	1.50	1.50	2.20	2.00	2.00	3.00	3.00	
	MAX	1.10	1.60	1.60	2.25	2.10	2.10	3.10	3.10	
E2	MIN	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00	
	NOM	0.70	0.70	1.20	1.20	1.20	2.20	2.20	3.20	
	MAX	0.80	0.80	1.30	1.30	1.30	2.30	2.30	3.30	
L	MIN	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
	NOM	0.55	0.55	0.55	0.50	0.55	0.55	0.55	0.55	
	MAX	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
N	4	6	6	6	6	6	8	10	8	3
ND	2	3	3	3	3	3	4	5	4	6
NOTES	1,2,13a	1,2	1,2,13a	1,2	1,2	1,2,13a	1,2	1,2,13a	1,2	
REF	11-619	11-585	11-585	11-585	11-619	11-585	11-585	11-585	11-585	
ISSUE	B	A	A	A	B	A	A	A	A	
OLD VARIATION DESIGNATORS	VCDB WCDB	VDDDB WDDDB	VDEB WDEB	VEEB N/A	N/A WEEB	VEGB WEGB	VGGB WGGB	VGJB WGJB	VJJB WJJB	

TABLE 10 e = 0.65mm PITCH									
SYMBOL \ VARIATION		V2020C	V3020C	V3030C-1	V3030C-2	V4040C			NOTE
		N/A	N/A	N/A	W3030C-2	W4040C			
		-	-	-	-	-			
D BSC		2.00	3.00	3.00	3.00	4.00			
E BSC		2.00	2.00	3.00	3.00	4.00			
D1 BSC		-	-	-	2.75	3.75			
E1 BSC		-	-	-	2.75	3.75			
D2	MIN	0.00	0.00	0.00	1.60	2.80			
	NOM	-	-	-	-	-			
	MAX	1.58	2.25	2.25	2.50	3.50			
E2	MIN	0.00	0.00	0.00	1.35	2.30			
	NOM	-	-	-	-	-			
	MAX	0.65	0.65	1.30	1.75	2.80			
L	MIN	0.20	0.20	0.20	0.30	0.30			
	NOM	0.30	0.30	0.30	0.40	0.40			
	MAX	0.45	0.45	0.45	0.50	0.50			
N		6	8	8	8	10			3
ND		3	4	4	4	5			6
NOTES		1,2	1,2,13b	1,2	1,2	1,2			
REF		11-619	11-619	11-585	11-660	11-660			
ISSUE		B	B	A	C	C			
OLD VARIATION DESIGNATORS		VCCC	VECC	VEEC-1	VEEC-2 WEEC-2	VGGC WGGC			

TABLE 11										<div><div></div></div> =0.50mm PITCH
VARIATION SYMBOL		V1510D	V1515D	V2010D-1	V2010D-2	V2015D-1	V2015D-2	V2020D-1	V2020D-2	NOTE
		W1510D	W1515D	W2010D-1	W2010D-2	W2015D-1	W2015D-2	W2020D-1	W2020D-2	
		-	-	-	-	-	-	-	-	
D BSC		1.50	1.50	2.00	2.00	2.00	2.00	2.00	2.00	
E BSC		1.00	1.50	1.00	1.00	1.50	1.50	2.00	2.00	
D1 BSC		1.25	1.25	1.75	1.75	1.76	1.75	1.75	1.75	
E1 BSC		0.75	1.25	0.75	0.75	1.25	1.25	1.75	1.75	
D2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	0.00	0.70	0.00	0.00	1.20	1.20	1.20	1.20	
	MAX	0.00	0.75	0.00	0.00	1.25	1.25	1.25	1.25	
E2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	0.00	0.10	0.00	0.00	0.10	0.10	0.60	0.60	
	MAX	0.00	0.15	0.00	0.00	0.15	0.15	0.65	0.65	
L	MIN	0.20	0.45	0.20	0.20	0.45	0.45	0.45	0.45	
	NOM	0.30	0.55	0.30	0.30	0.55	0.55	0.55	0.55	
	MAX	0.40	0.65	0.40	0.40	0.65	0.65	0.65	0.65	
N		4	4	4	6	4	6	4	6	3
ND		2	2	2	3	2	3	2	3	6
NOTES		1,2,13b	1,2	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2	1,2	
REF		11-585	11-585	11-585	11-585	11-585	11-585	11-585	11-585	
ISSUE		A	A	A	A	A	A	A	A	
OLD VARIATION DESIGNATORS		VBAD WBAD	VBBB WBBB	VCAD-1 WCAD-1	VCAD-2 WCAD-2	VCBD-1 WCBD-1	VCBD-2 WCBD-2	VCCD-1 WCCD-1	VCCD-2 WCCD-2	

TABLE 12 e=0.50mm PITCH									
SYMBOL \ VARIATION	V2020D-3	V2020D-4	V2025D-1	V2025D-2	V2030D-1	V2030D-2	V2030D-3	-	NOTE
	N/A	W2020D-4	W2025D-1	W2025D-2	W2030D-1	W2030D-2	W2030D-3	-	
	-	-	-	-	-	-	-	U2030D	
D BSC	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
E BSC	2.00	2.00	2.50	2.50	3.00	3.00	3.00	3.00	
D1 BSC	-	1.75	1.75	1.75	1.75	1.75	1.75	-	
E1 BSC	-	1.75	2.25	2.25	2.75	2.75	2.75	-	
D2	MIN	0.00	1.30	0.00	0.00	0.60	1.50	1.20	
	NOM	1.20	-	1.00	-	-	-	-	
	MAX	1.25	1.75	1.10	1.10	1.00	1.75	1.60	
E2	MIN	0.00	0.50	0.00	0.00	0.90	1.60	1.20	
	NOM	0.60	-	0.70	-	-	-	-	
	MAX	0.65	0.80	0.80	0.80	1.20	1.90	1.60	
L	MIN	0.20	0.30	0.45	0.45	0.30	0.30	0.30	
	NOM	0.30	0.40	0.55	0.55	0.40	0.40	-	
	MAX	0.45	0.50	0.65	0.65	0.50	0.50	0.45	
N	8	6	6	8	6	8	8	8	3
ND	4	3	3	4	3	4	4	4	6
NOTES	1,2	1,2	1,2,13a	1,2,13a	1,2,13a	1,2,13a	1,2,13a	1,2,13a	
REF	11-585	11-660	11-585	11-660	11-660	11-660	11-779	11-861	
ISSUE	A	C	A	C	C	C	D	F	
OLD VARIATION DESIGNATORS	VCCD-3 N/A	VCCD-4 WCCD-4	VCDD-1 WCDD-1	VCDD-2 WCCD-2	VCED-1 WCED-1	VCED-2 WCED-2	VCED-3 WCED-3	- -	

TABLE 13 e=0.50mm PITCH									
SYMBOL \ VARIATION	V2515D-1	V2515D-2	V2520D-1	V2520D-2	V2520D-3	V2525D-1	V2525D-2	V2530D	NOTE
	W2515D-1	W2515D-2	W2520D-1	W2520D-2	W2520D-3	W2525D-1	W2525D-2	W2530D	
	-	-	-	-	-	-	-	-	
D BSC	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
E BSC	1.50	1.50	2.00	2.00	2.00	2.50	2.50	3.00	
D1 BSC	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	
E1 BSC	1.25	1.25	1.75	1.75	1.75	2.25	2.25	2.75	
D2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	1.70	1.70	1.70	1.70	1.70	1.70	1.70	
	MAX	1.75	1.75	1.75	1.75	1.75	1.75	1.75	
E2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	0.10	0.10	0.60	0.60	0.60	1.10	1.10	
	MAX	0.15	0.15	0.65	0.65	0.65	1.15	1.15	
L	MIN	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
	NOM	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
	MAX	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
N	6	8	4	6	8	6	8	8	3
ND	3	4	2	3	4	3	4	4	6
NOTES	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2	1,2	1,2,13a	
REF	11-585	11-619	11-585	11-585	11-585	11-585	11-585	11-585	
ISSUE	A	B	A	A	A	A	A	A	
OLD VARIATION DESIGNATORS	VDBD-1 WDBD-1	VDBD-2 WDBD-2	VD CD-1 WD CD-1	VD CD-2 WD CD-2	VD CD-3 WD CD-3	VDDD-1 WDDD-1	VDDD-2 WDDD-2	VDED WDED	

TABLE 14 e = 0.50mm PITCH										
SYMBOL \ VARIATION		V3015D-1	V3015D-2	V3020D-1	V3020D-2	V3020D-3	V3020D-4	V3025D-1	V3025D-2	NOTE
		W3015D-1	W3015D-2	W3020D-1	W3020D-2	N/A	W3020D-4	W3025D-1	W3025D-2	
		-	-	-	-	-	-	-	-	
D BSC		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
E BSC		1.50	1.50	2.00	2.00	2.00	2.00	2.50	2.50	
D1 BSC		2.75	2.75	2.75	2.75	-	2.75	2.75	2.75	
E1 BSC		1.25	1.25	1.75	1.75	-	1.75	2.25	2.25	
D2	MIN	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00	
	NOM	2.20	2.20	2.20	2.20	2.20	-	2.20	2.20	
	MAX	2.25	2.25	2.25	2.25	2.25	2.20	2.25	2.25	
E2	MIN	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	
	NOM	0.10	0.10	0.60	0.60	0.60	-	1.10	1.10	
	MAX	0.15	0.15	0.65	0.65	0.65	0.60	1.15	1.15	
L	MIN	0.45	0.45	0.45	0.45	0.20	0.30	0.45	0.30	
	NOM	0.55	0.55	0.55	0.55	0.30	0.40	0.55	0.50	
	MAX	0.65	0.65	0.65	0.65	0.45	0.50	0.65	0.65	
N		8	10	8	10	10	8	8	10	3
ND		4	5	4	5	5	4	4	5	6
NOTES		1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	
REF		11-585	11-585	11-585	11-585	11-585	11-660	11-585	11-585	
ISSUE		A	A	A	A	A	C	A	A	
OLD VARIATION DESIGNATORS		VEBD-1 WEBD-1	VEBD-2 WEBD-2	VECD-1 WECD-1	VECD-2 WECD-2	VECD-3 N/A	VECD-4 WECD-4	VEDD-1 WEDD-1	VEDD-2 WEDD-2	

TABLE 15 e = 0.50mm PITCH										
SYMBOL \ VARIATION		V3030D-1	N/A	V3030D-2	N/A	V3030D-3	V3030D-4	V3030D-5	V3030D-6	NOTE
		N/A	W3030D-1	N/A	W3030D-2	N/A	W3030D-4	W3030D-5	W3030D-6	
		-	-	-	-	-	-	-	-	
D BSC		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
E BSC		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
D1 BSC		2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	
E1 BSC		2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	
D2	MIN	0.00	0.00	0.00	0.00	0.00	2.20	2.20	2.00	
	NOM	2.20	2.00	2.20	2.00	2.20	-	-	-	
	MAX	2.25	2.10	2.25	2.10	2.25	2.70	2.70	2.50	
E2	MIN	0.00	0.00	0.00	0.00	0.00	1.40	1.40	1.20	
	NOM	1.60	1.20	1.60	1.20	1.60	-	-	-	
	MAX	1.65	1.30	1.65	1.30	1.65	1.75	1.75	1.50	
L	MIN	0.45	0.45	0.45	0.45	0.20	0.30	0.30	0.45	
	NOM	0.55	0.55	0.55	0.55	0.30	0.40	0.40	0.55	
	MAX	0.65	0.65	0.65	0.65	0.45	0.50	0.50	0.65	
N		8	8	10	10	10	8	10	8	3
ND		4	4	5	5	5	4	5	4	6
NOTES		1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF		11-585	11-585	11-585	11-585	11-585	11-660	11-660	11-660	
ISSUE		A	A	A	A	A	C	C	C	
OLD VARIATION DESIGNATORS		VEED-1 N/A	N/A WEED-1	VEED-2 N/A	N/A WEED-2	VEED-3 N/A	VEED-4 WEED-4	VEED-5 WEED-5	VEED-6 WEED-6	

TABLE 16 $e=0.50\text{mm}$ PITCH									
SYMBOL \ VARIATION	V3030D-7	V3040D	V3525D-1	V3525D-2	V3530D-1	V3530D-2	V3535D-1	V3535D-2	NOTE
	W3030D-7	W3040D	W3525D-1	W3525D-2	W3530D-1	W3530D-2	W3535D-1	W3535D-2	
	—	—	—	—	—	—	—	—	
D BSC	3.00	3.00	3.50	3.50	3.50	3.50	3.50	3.50	
E BSC	3.00	4.00	2.50	2.50	3.00	3.00	3.50	3.50	
D1 BSC	2.75	2.75	3.25	3.25	3.25	3.25	3.25	3.25	
E1 BSC	2.75	3.75	2.25	2.25	2.75	2.75	3.25	3.25	
D2	MIN	1.20	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	—	2.00	2.70	2.70	2.70	2.70	2.70	
	MAX	1.60	2.10	2.75	2.75	2.75	2.75	2.75	
E2	MIN	1.20	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	—	2.20	1.10	1.10	1.60	1.60	2.10	
	MAX	1.60	2.30	1.15	1.15	1.65	1.65	2.15	
L	MIN	0.30	0.45	0.45	0.45	0.45	0.45	0.45	
	NOM	—	0.55	0.55	0.55	0.55	0.55	0.55	
	MAX	0.45	0.65	0.65	0.65	0.65	0.65	0.65	
N	8	10	10	12	10	12	10	12	3
ND	4	5	5	6	5	6	5	6	6
NOTES	1,2	1,2,13a	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2	1,2	
REF	11-779	11-585	11-585	11-585	11-585	11-585	11-585	11-585	
ISSUE	D	A	A	A	A	A	A	A	
OLD VARIATION DESIGNATORS	VEED-7 WEED-7	VEGD WEGD	VFDD-1 WFDD-1	VFDD-2 WFDD-2	VFED-1 WFED-1	VFED-2 WFED-2	VFFD-1 WFFD-1	VFFD-2 WFFD-2	

TABLE 17 $e=0.50\text{mm}$ PITCH									
SYMBOL \ VARIATION	V4030D-1	V4030D-2	V4030D-3	V4030D-4	V4040D-1	N/A	V4040D-2	N/A	NOTE
	W4030D-1	W4030D-2	W4030D-3	W4030D-4	N/A	W4040D-1	N/A	W4040D-2	
	—	—	—	—	—	—	—	—	
D BSC	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
E BSC	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	
D1 BSC	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	
E1 BSC	2.75	2.75	2.75	2.75	3.75	3.75	3.75	3.75	
D2	MIN	0.00	0.00	0.00	3.00	0.00	0.00	0.00	
	NOM	3.20	3.20	3.20	—	3.20	3.00	3.20	
	MAX	3.25	3.25	3.25	3.70	3.25	3.10	3.25	
E2	MIN	0.00	0.00	0.00	1.40	0.00	0.00	0.00	
	NOM	1.60	1.60	1.60	—	2.60	2.20	2.60	
	MAX	1.65	1.65	1.65	1.80	2.65	2.30	2.65	
L	MIN	0.45	0.45	0.45	0.30	0.45	0.45	0.45	
	NOM	0.55	0.55	0.55	0.40	0.55	0.55	0.55	
	MAX	0.65	0.65	0.65	0.50	0.65	0.65	0.65	
N	10	12	14	12	10	10	12	12	3
ND	5	6	7	6	5	5	6	6	6
NOTES	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2	1,2	1,2	1,2	
REF	11-585	11-585	11-585	11-660	11-585	11-585	11-585	11-585	
ISSUE	A	A	A	C	A	A	A	A	
OLD VARIATION DESIGNATORS	VGED-1 WGED-1	VGED-2 WGED-2	VGED-3 WGED-3	VGED-4 WGED-4	VGGD-1 N/A	N/A WGGD-1	VGGD-2 N/A	N/A WGGD-2	

TABLE 18 $e=0.50\text{mm}$ PITCH									
SYMBOL \ VARIATION	V4040D-3	N/A	V4050D	V5030D-1	V5030D-2	V5040D-1	V5040D-2	V5040D-3	NOTE
	N/A	W4040D-3	W4050D	W5030D-1	W5030D-2	W5040D-1	W5040D-2	W5040D-3	
	-	-	-	-	-	-	-	-	
D BSC	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	
E BSC	4.00	4.00	5.00	3.00	3.00	4.00	4.00	4.00	
D1 BSC	3.75	3.75	3.75	4.75	4.75	4.75	4.75	4.75	
E1 BSC	3.75	3.75	4.75	2.75	2.75	3.75	3.75	3.75	
D2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	3.20	3.00	3.00	4.20	4.20	4.20	4.20	
	MAX	3.25	3.10	3.10	4.25	4.25	4.25	4.25	
E2	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	NOM	2.60	2.20	3.20	1.60	1.60	2.60	2.60	
	MAX	2.65	2.30	3.30	1.65	1.65	2.65	2.65	
L	MIN	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
	NOM	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
	MAX	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
N	14	14	14	16	18	14	16	18	3
ND	7	7	7	8	9	7	8	9	6
NOTES	1,2	1,2	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	1,2,13b	
REF	11-585	11-585	11-585	11-585	11-585	11-585	11-585	11-585	
ISSUE	A	A	A	A	A	A	A	A	
OLD VARIATION DESIGNATORS	VGGD-3 N/A	N/A WGGD-3	VGJD WGJD	VJED-1 WJED-1	VJED-2 WJED-2	VJGD-1 WJGD-1	VJGD-2 WJGD-2	VJGD-3 WJGD-3	

TABLE 19 $e=0.50\text{mm}$ PITCH									
SYMBOL \ VARIATION	V5050D-1	N/A	V5050D-2	N/A	V6050D-1	V6050D-2			NOTE
	N/A	W5050D-1	N/A	W5050D-2	W6050D-1	W6050D-2			
	-	-	-	-	-	-	-	-	
D BSC	5.00	5.00	5.00	5.00	6.00	6.00			
E BSC	5.00	5.00	5.00	5.00	5.00	5.00			
D1 BSC	4.75	4.75	4.75	4.75	5.75	5.75			
E1 BSC	4.75	4.75	4.75	4.75	4.75	4.75			
D2	MIN	0.00	0.00	0.00	3.80	3.80			
	NOM	4.20	4.00	4.20	4.00	-	-		
	MAX	4.25	4.10	4.25	4.10	4.70	4.70		
E2	MIN	0.00	0.00	0.00	2.80	2.80			
	NOM	3.60	3.20	3.60	3.20	-	-		
	MAX	3.65	3.30	3.65	3.30	3.40	3.40		
L	MIN	0.45	0.45	0.45	0.45	0.45			
	NOM	0.55	0.55	0.55	0.55	0.55			
	MAX	0.65	0.65	0.65	0.65	0.65			
N	16	16	18	18	16	18			3
ND	8	8	9	9	8	9			6
NOTES	1,2	1,2	1,2	1,2	1,2,13b	1,2,13b			
REF	11-585	11-585	11-585	11-585	11-660	11-660			
ISSUE	A	A	A	A	C	C			
OLD VARIATION DESIGNATORS	VJJD-1 N/A	N/A WJJD-1	VJJD-2 N/A	N/A WJJD-2	VLJD-1 WLJD-1	VLJD-2 WLJD-2			

NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5–2009.

2. ALL DIMENSIONS ARE IN MILLIMETERS, θ IS IN DEGREES.

3. N IS THE TOTAL NUMBER OF TERMINALS.

4. THE TERMINAL #1 IDENTIFIER AND TERMINAL NUMBERING CONVENTION SHALL CONFORM TO JEP95 SEC. 3 SPP–012. DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL, BUT MUST BE LOCATED WITHIN THE ZONE INDICATED. THE TERMINAL #1 IDENTIFIER MAY BE EITHER A MOLD, EMBEDDED METAL OR MARKED FEATURE.

5. DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15mm AND 0.30mm FROM TERMINAL TIP.

6. ND REFERS TO THE MAXIMUM NUMBER OF TERMINALS ON D SIDE.

7. DEPOPULATION IS ALLOWABLE IN A SYMMETRICAL FASHION. NON–SYMMETRIC DEPOPULATION ALLOWED ONLY ON PACKAGE WHEN $N \leq 6$.

8. VARIATION W3030D–2 IS SHOWN FOR ILLUSTRATION ONLY.

9. A2, D1 AND E1 ARE APPLICABLE ONLY WHEN PACKAGES ARE CONSTRUCTED PER FIGURE 2.

10. FOR A COMPLETE SET OF DIMENSIONS FOR EACH VARIATION, SEE THE INDIVIDUAL VARIATION AND THE COMMON DIMENSIONS AND TOLERANCES ON PAGE 5.

11. UNILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

12. SOME VARIATIONS MAY NOT BE ACHIEVABLE WITH SHEARING (PUNCH) MANUFACTURE.

13. IN THE CASE OF THE RECTANGULAR PACKAGE, THE TERMINAL SIDE OF THE PACKAGE IS DETERMINED AS FOLLOWS:

a) TYPE 1: THE TERMINALS ARE ON THE SHORT SIDE OF THE PACKAGE.

b) TYPE 2: THE TERMINALS ARE ON THE LONG SIDE OF THE PACKAGE.

14. DEPENDING ON THE METHOD OF MANUFACTURING A MAXIMUM OF 0.15mm PULL BACK (L1) MAY BE PRESENT.

15. IF PACKAGE IS MANUFACTURED WITH TERMINALS THAT EXTEND FROM THE PLASTIC BODY (L2), THEN THE PROFILE TOLERANCE [aaa] WILL BE APPLICABLE ONLY TO THE PLASTIC BODY AND NOT TO THE TERMINAL TIPS.

16. VARIOUS COMPANIES HAVE ISSUED PATENTS AND RELATED PATENT APPLICATIONS THAT MAY APPLY TO THIS REGISTRATION IF THE CURRENT ISSUE PATENTS OR LATER PATENTS RESULTING FROM RELATED APPLICATIONS DO APPLY, THESE COMPANIES INTEND TO COMPLY WITH THE JEDEC PATENT POLICY AND LICENSE UNDER REASONABLE TERMS AND CONDITIONS THAT ARE DEMONSTRABLY FREE OF ANY UNFAIR DISCRIMINATION. REFERENCED PATENTS ARE AS FOLLOWS:

AMKOR TECHNOLOGY	U.S. PATENT – No. 6,143,981
UTAC HK LIMITED	U.S. PATENT – No. 6,229,200; 6,242,281; 6,294,100; 6,545,347; 6,585,905; 6,734,044; 6,940,154; 7,071,545; 7,091,581 & 7,247,526
NATIONAL SEMICONDUCTOR	U.S. PATENT – No. 6,130,473

17. WHEN MORE THAN ONE VARIATION (OPTION) EXISTS FOR THE SAME PROFILE HEIGHT, BODY SIZE (DxE), AND PITCH, THEN THOSE VARIATIONS WILL BE DENOTED BY AN ADDITIONAL DASH NUMBER (i.e. –1, –2, etc) DESIGNATOR TO IDENTIFY THEM. THE NEW VARIATIONS WOULD BE CREATED FROM ALL OR ANY OF THE FOLLOWING REASONS: TERMINAL COUNT, TERMINAL LENGTH, AND/OR EXPOSED PAD SIZES.

CHANGE RECORD

IF THE CHANGE INVOLVES ANY WORDS ADDED OR DELETED (EXCLUDING DELETION OF ACCIDENTALLY REPEATED WORDS), THE CHANGE IS TO BE INCLUDED BELOW. PUNCTUATION CHANGES MAY OR MAY NOT BE INCLUDED.

INITIAL ISSUE: A	DATE: JANUARY 2001	ITEM: 11.11-585
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REVISION HISTORY:

ISSUE: D	DATE: NOVEMBER 2007	ITEM: 11.11-779
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LOCATION:	CHANGED FROM:	CHANGED TO:
TABLES 5 & 15	EXISTING	ADDED PAGE VARIATIONS (V/WEED-7)
TABLES 6 & 12	EXISTING	ADDED VARIATIONS (V/WCED-3)
TABLES 12-19	EXISTING	RE-ORGANIZE TO FIT ADDITIONAL VARIATIONS STATED ABOVE.
TABLE 2	(FOR 0.4MM PITCH) aaa=0.15	aaa=0.10 (UPDATED PER DESIGN GUIDE 4.8)
TABLE 3	A MIN = 0.80 FOR "V" PROFILE	A MIN =>0.80 (UPDATED PER SPP-017)
NOTE 16	EXISTING	ADDED NEW US PATENTS FOR ASAT

ISSUE: E	DATE: JANUARY 2010	ITEM: 11-827
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LOCATION:	CHANGED FROM:	CHANGED TO:
PAGE 1-2 (SIDEVIEW)	EXISTING	REDRAW & CLARIFY A1 AND SEATING PLANE
TABLES 1, 5-19	EXISTING VARIATION CODES	CHANGE D & E CODES FROM LETTERS TO NUMBERS THUS CREATING ALPHA-NUMERIC VARIATION CODES.
PG 14 - NOTES 7&12	EXISTING	CORRECTED GRAMMAR
PG 15, NOTE 8	EXISTING	CHANGE TO SHOW NEW (ALPHA-NUMERIC) VARIATION CODES.

ISSUE: F	DATE: AUG 2012	ITEM: 11-861
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LOCATION:	CHANGED FROM:	CHANGED TO:
TABLES 1, 3, 6 AND 12	EXISTING	ADDED ULTRA-THIN PKG OPT ADDED VARIATION U2030D
NOTE 16	EXISTING	CHANGED ASAT US PATENTS TO UTAC LIMITED